

CLAIMS

1. A semiconductor device comprising:
 - a modulation circuit;
 - 5 a demodulation circuit;
 - a logic circuit connected to the demodulation circuit;
 - an antenna circuit which is electrically connected to the modulation circuit and the demodulation circuit;
 - 10 a memory circuit for storing an output signal of the logic circuit; and
 - a control circuit,
 - wherein the memory circuit comprises a ferroelectric capacitor; and
 - wherein data is written to the memory circuit based on the instruction of the control circuit.
- 15 2. A semiconductor device comprising:
 - a modulation circuit;
 - a demodulation circuit;
 - a logic circuit connected to the demodulation circuit;
 - an antenna circuit which is electrically connected to the modulation circuit and 20 the demodulation circuit;
 - a memory circuit for storing an output signal of the logic circuit; and
 - means for controlling data to be written or not to the memory circuit,
 - wherein the memory circuit comprises a ferroelectric capacitor; and
 - wherein data is written to the memory circuit based on the instruction of the 25 means for controlling data.
3. The semiconductor device according to claim 1 or 2,
 - wherein a memory cell that forms the memory circuit includes two transistors and two ferroelectric capacitors.

4. The semiconductor device according to claim 1 or 2,
wherein a memory cell that forms the memory circuit includes one transistor
and one ferroelectric capacitor.

5 5. The semiconductor device according to claim 1 or 2,
wherein at least one of the modulation circuit, the demodulation circuit, the
logic circuit, and the memory circuit is constituted by a thin film transistor.

10 6. The semiconductor device according to claim 1 or 2,
wherein the antenna circuit, the modulation circuit, the demodulation circuit,
the logic circuit, and the memory circuit are provided over the same insulating substrate.

15 7. The semiconductor device according to claim 1 or 2,
wherein the modulation circuit, the demodulation circuit, the logic circuit, and
the memory circuit are integrally formed over the same insulating substrate, and
wherein the antenna circuit is provided over another insulating substrate.

8. The semiconductor device according to claim 1 or 2,
wherein the insulating substrate is a glass substrate.

20 9. The semiconductor device according to claim 1 or 2,
wherein the insulating substrate is a plastic substrate.

25 10. The semiconductor device according to claim 1 or 2,
wherein the insulating substrate is an insulator in a film form.

11. The semiconductor device according to claim 1 or 2,
wherein the antenna circuit is provided over at least one of the modulation
circuit, the demodulation circuit, the logic circuit, and the memory circuit.

12. The semiconductor device according to claim 1 or 2,

wherein a signal inputted to the antenna circuit is a wireless signal.

13. A product having the semiconductor device according to claim 1 or 2,

5 wherein the product is selected from the group consisting of a wireless chip, an IC card, an IC tag, a transponder, a bill, securities, a passport, a bag, and a garment .

14. A product having the semiconductor device according to claim 1 or 2,

wherein the product is an electronic apparatus.

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15. A semiconductor device comprising:

a memory comprising a ferroelectric capacitor over an insulating substrate; and
a control circuit over the insulating substrate,

wherein data is written to the memory circuit based on the instruction of the

15 control circuit.

16. A semiconductor device comprising:

a memory comprising a ferroelectric capacitor over an insulating substrate; and
means for controlling data to be written or not to the memory circuit over the

20 insulating substrate,

wherein data is written to the memory circuit based on the instruction of the

means for controlling data.

17. The semiconductor device according to claim 15 or 16,

25 wherein a memory cell that forms the memory circuit includes two transistors
and two ferroelectric capacitors.

18. The semiconductor device according to claim 15 or 16,

wherein a memory cell that forms the memory circuit includes one transistor

30 and one ferroelectric capacitor.

19. The semiconductor device according to claim 15 or 16,
wherein the memory circuit is constituted by a thin film transistor.

5 20. The semiconductor device according to claim 15 or 16,
wherein the insulating substrate is a glass substrate.

21. The semiconductor device according to claim 15 or 16,
wherein the insulating substrate is a plastic substrate.

10 22. The semiconductor device according to claim 15 or 16,
wherein the insulating substrate is an insulator in a film form.

23. A product having the semiconductor device according to claim 15 or 16,
15 wherein the product is an electronic apparatus.